

**NON-PROJECT / NON-TASK SPECIFIC GENERAL ENGINEERING  
SCOPE OF WORK – CDOT REGION 5**

**SCOPE DATE: NOVEMBER 2011**

**CONTRACT ADMINISTRATION:**

REGION TRANSPORTATION DIRECTOR:  
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REGION 5  
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General administration of this contract will be delegated to Dale Martinez, Acting Program Engineer. Active day to day administration and monitoring of contract task orders will be delegated to Regional Resident Engineers or CDOT PEs within each task order.

Type of work may include all or parts of the following activities:

- A. General Engineering Services - The scope for general engineering and design services may include but shall not necessarily be limited to:
  - a. Provide conceptual drawings, graphs, data collection, or charts for the Region's planning, environmental, or other units as needed.
  - b. Conduct Studies - transportation, environmental, etc.
  - c. Provide support for region planning activities, including assistance with public meetings.
  - d. Provide design support for off systems or other modes of transportation alternatives.
  - e. Provide drafting support or CADD services. All CADD work for CDOT will be conducted using Microstation and Inroads Software, latest versions used by CDOT.
  - f. Provide lighting plans and analysis.
  - g. Provide support research or search county, state or other areas for records or documents relevant to the project or task.
  - h. Provide or acquire design services as required to complete tasks not specifically defined in the outline, but that may be required by specific task order.
- B. Bridge/Structural Design Activities - The scope of work for bridge design activities may include:
  - a. Provide design services for various highway structures or portions of highway structures.
  - b. Furnish detailing services including drafting and quantity calculations for various highway structures or portions of highway structures.
  - c. Inspect and rate highway bridges.
  - d. Provide bridge design and detailed review of work performed by other designers.
  - e. Provide wall design and detailed review of work performed by other designers.

- f. Provide structural selection reports and structure selection studies.
  - g. Provide a structure concept study.
  - h. Obtain structural data.
  - i. Provide foundation investigation report.
  - j. Coordinate with outside agencies; for example, railroad agencies.
- C. Roadway Design Activities - The scope of work for roadway design activities may include:
  - a. Provide design services including quantity calculations for the various components of roadway construction, which could include intersection layout, interchanges, signals, structures, lighting, landscaping, irrigation design, ditch design, waterline, and sanitary sewer design.
  - b. Furnish detailing and drafting services utilizing MicroStation and Inroads Software, latest CDOT adopted versions utilizing CDOT format. Other software required for design services and communication of information are Microsoft office products such as word, excel, power point. In addition project wise or FTP sites may be required for file sharing. Other formats or software products may be required for specific tasks such as traffic modeling or truck turning movements.
  - c. Attend scoping reviews, design office reviews, field inspection reviews, and final office reviews and provide minutes as appropriate.
  - d. Prepare (PS&E Package) final plans, specifications and provide the CDOT project manager with detailed estimates that can be entered into CDOT Trns-port application system.
  - e. Prepare revisions under-advertisement to plans or specifications when necessary..
  - f. Design and layout of intersections and interchanges.
- D. Hydrology Activities - The scope of work for the hydrology activities may include:
  - a. Collect historical drainage data.
  - b. Establish drainage basin data.
  - c. Select run-off parameters and predict peak flow.
- E. Hydraulics Design Activities - The scope of work for hydraulics design activities may include:
  - a. Furnish the size and location of drainage structures.
  - b. Furnish storm sewer design.
  - c. Furnish erosion protection design and NPDES requirements.
  - d. Furnish quantity calculations for drainage structures including irrigation and permanent BMP's for surface drainage.
  - e. Design of water and waste water systems.
  - f. Irrigation system designs including, but not limited to, typical ditches, traveling gun irrigation systems and other center pivot systems.
- F. Traffic Engineering Activities - The scope of work for traffic engineering activities may include:
  - a. Collect traffic data.
  - b. Perform traffic studies or analyses.

- c. Perform in-field inventories of traffic control device locations and conditions.
  - d. Furnish design and quantity calculations necessary to prepare signal, signing or pavement marking plans.
  - e. Furnish detailing and drafting services.
  - f. Attend field inspection and final office review.
  - g. Prepare construction signing plans and schedules.
  - h. Prepare final plans and specifications.
  - i. Perform passing zone analysis to validate or update current striping logs or plans.
- G. Landscape Architectural Activities - The scope of work for landscape architectural activities may include:
- a. Provide estimates of quantities of native seeding and mulching for the FIR plans.
  - b. Determine most economic landscape alternative, finalize concept, and complete the plan.
  - c. Verify that an acceptable safe recovery distance exists between traveled way and all trees to be planted.
  - d. Coordinate all special permits that may be required.
  - e. Coordinate ROW requirements.
  - f. Write Special Provisions and submit to the CDOT/PM with the completed roadside plans.
  - g. Submit the approved plan/special provisions to the Design Engineer for inclusion in the Project Plans.
  - h. Verify availability of plant materials and submit letter to the CDOT/PM certifying that designated plants are available.
  - i. Provide recommendations for alternative landscape designs and recommendations for Best Management Practices for temporary and permanent erosion protection.
  - j. Provide Storm Water Plan Sheets with BMP locations and quantity calculations.
- H. Noise Study - The scope of work for noise study activities may include:
- a. Predict or measure present noise levels.
  - b. Analyze noise levels for all alternatives, including the no-build. Noise level models will be made with at least CDOT's stamina noise computer model or better. Distances at which noise levels exceed acceptable levels will be determined for each alternate and plotted on corridor maps.
  - c. Identify locations where noise abatement measures are needed, determine which measure is feasible and cost effective, and estimate construction and maintenance costs.
  - d. Prepare a noise assessment report for acceptance by CDOT.
- I. Value Engineering (VE) - The scope of work for value engineering activities may include:
- a. Conduct VE meetings and provide minutes. The VE meetings should be considered for the following efforts:
    - 1. Brain Storming
    - 2. Evaluating alternatives upon meeting the project purposes and need
    - 3. Recommend alternatives based upon:
      - Most benefit to purpose and need

- Minimal or mitigatable impacts
    - Constructibility
    - Cost
    - Best overall response to constraints and concerns
  - b. Collect and compile VE cost and workhour data.
  - c. Provide Final VE Report.
- J. Geotechnical Services for Design - The scope of work for design services include:
- a. Provide field sampling and testing of existing pavements and soils necessary for proper pavement design as per the CDOT Pavement Design Manual.
  - b. Perform boring and subsurface geotechnical investigations for Structure Selection Reports.
  - c. Provide testing results used in the design process that are certified by a professional engineer.
  - d. Provide other geotechnical services as requested in writing, including but not limited to subsurface investigations, instrumentation, foundation reports, landslide evaluations, MSE wall designs, soil nail designs, and retaining wall designs.
- K. Environmental Services - The scope of work for environmental services may include:
- a. Review environmental conditions, determine required permits.
  - b. Delineation and mitigation recommendations of wetlands.
  - c. Prepare and/or review environmental documents for CDOT projects.
  - d. Conduct and prepare environmental surveys and clearance reports.
- L. Design Services Under Construction – the Scope of Work for design services under construction may include:
- a. Review of actual subsurface conditions to verify structural design.
  - b. Review and approval of shop drawings.
  - c. Changes in design based on field conditions.
  - d. Services as needed per PE stamp requirements on design drawings.
  - e. Claim and schedule analysis.
  - f. Analysis of VE proposals.
  - g. Analysis of construction phasing false work, shoring, methods statements, and CPM schedules (Microsoft Project and/or Primavera).
- M. Other Services - As requested Design and/ or General Engineering SOW by the Regions and specified in the task orders for other services not specified above may be requested on an as needed basis.

The scope of work for these services will include the details of the SOW and General Engineering Requirements.